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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,804	11/13/2001	Hitoshi Tsuboi	1272.C0488	6112

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EXAMINER

NGUYEN, LAM S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,804

Applicant(s)

TSUBOI ET AL.

Examiner

LAM S NGUYEN

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 54 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-20, 22-34, 36-47 and 49-54 is/are rejected.
- 7) ☒ Claim(s) 7, 21, 35 and 48 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-6, 8, 10, 11, 13-20, 22, 24, 25, 27-34, 36, 38-47, 49, 51-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Lund et al. (US 5659342).

Lund et al. disclose an ink jet printing apparatus capable of performing a preliminary ejecting operation that does not contribute to printing (in term of “purging”) (Abstract), said apparatus comprising:

a print head having a nozzle wherein an amount of ink ejected through said nozzle varies depending on time during which printing is not executed (column 1, line 40-45: the combination of small nozzles and quick drying ink leaves the printheads susceptible to clogging. This causes the amount of ink ejected through a nozzle varies depending on time during which printing is not executed), and in that:

said preliminary ejecting operation is performed taking an opportunity in which an amount of ink passing through said nozzle is decreased below a normal value (column 1, line 47-51: spitting is needed when nozzles are partially blocked means that when the amount of ink passing through a nozzle is decreased below a corresponding value) (**Referring to claims 2, 16, 30, 43**).

Referring to claims 3, 17, 31, 44: wherein said opportunity corresponds to a first ejection or first and second ejections following a last ejection (column 6, line 60-67).

Referring to claims 4, 18, 32, 45: wherein said opportunity corresponds to an ejection between time when said amount of ink passing through said nozzle starts to decrease below said normal value and time when said amount of ink recovers to said normal value (column 1, line 47-51: spitting is needed when nozzles are partially blocked means that when the amount of ink passing through a nozzle is decreased below a corresponding value).

Referring to claims 5, 19, 33, 46: wherein said preliminary ejecting operation is performed on a print medium (Abstract).

Referring to claims 6, 20, 34, 47: wherein said preliminary ejecting operation is performed on said print medium only if dots formed on said print medium may be unnoticeable compared to a printed image, and wherein said preliminary ejecting operation is performed on an object other than said print medium if dots may be noticeable (column 5, line 1-3, column 7, line 12-15, and column 6, line 58-67).

Referring to claims 8, 22, 36, 49: wherein said preliminary ejecting operation is performed when a predetermined time has elapsed after a last ejection, said predetermined time including time during which said amount of ink passing through said nozzle is decreased significantly (column 5, line 66 to column 6, line 3).

Referring to claims 10, 11, 24, 25, 38, 39, 51, 52: wherein said print head has a plurality of nozzles, and wherein said predetermined time is determined for each of nozzles and wherein said predetermined time for each of said nozzles is corrected using dithering, error diffusions, or

random numbers so that a dot pattern formed during said preliminary ejecting operation for said plurality of nozzles is unnoticeable compared to a printed image (column 7, line 12-15).

Referring to claims 13, 27, 40, 53: wherein said print head includes an electrothermal converting element, said print head ejecting ink using thermal energy generated by said electrothermal converting element (column 3, line 31-32).

Referring to claims 14, 28, 41, 54: wherein said print head includes a piezoelectric element, said print head ejecting ink using mechanical energy generated by said piezoelectric element (column 3, line 32-34).

Referring to claim 15: using ink containing a pigment as a color material (column 1, line 35-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 12, 23, 26, 37, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund et al. (US 5659342) in view of Fujii (US 6299277).

Lund et al. disclose the claimed invention as discussed above and also disclose wherein said predetermined time is determined depending on a temperature condition of said printing apparatus (column 5, line 26-35). However, Lund et al. do not disclose that said predetermined time is determined depending on a humidity condition of said printing apparatus, a table used to determine said predetermined time and ejecting numbers for said preliminary ejecting

Art Unit: 2853

operation, and a control device for controlling said predetermined ejecting operation, said control device using said table to perform said predetermined ejecting operation (**Referring to claims 12, 26**).

Fujii discloses that a predetermined time of a recovering process is determined depending on a humidity condition of said printing apparatus (column 3, line 53 to column 4, line 10), a table used to determined said predetermined time and ejecting numbers for said preliminary ejecting operation, and a control device for controlling said predetermined ejecting operation, said control device using said table to perform said predetermined ejecting operation (column 4, line 5-16: a conversion table for converting the relative humidity to the evaporation rate of water from the ink. Based on the evaporation rate, the suitable timing is determined).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the conversion table for converting the relative humidity to the evaporation rate of water from the ink for determining the predetermined time to perform the recovering operation as disclosed by Fujii into the ink jet printing apparatus as disclosed by Lund et al. The motivation of doing so is to determine suitable timing which fulfills necessary and sufficient conditions in executing the removal of thickened ink adhering the printhead in order to enable the ink jet printer to flexibly cope with changes in the environment as taught by Fujii (column 4, line5-10).

Allowable Subject Matter

3. Claims 7, 21, 35, and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2853

The most pertinent arts Lund et al. (US 5659342) and (US 6299277) fail to disclose wherein said preliminary ejecting operation is performed on an object other than said print medium if said amount of ink decreases below said normal value before said print medium reaches a printed position relative to said print head. Therefore, the claimed invention is not disclosed by the prior arts.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JOHN E BARLOW can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

October 17, 2002


John Barlow
Supervisory Patent Examiner
Technology Center 2800